PREVALENCE OF TORCH INFECTIONS AND HIV IN PATIENTS WITH BAD OBSTETRIC HISTORY

THESIS

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This is to certify that the work entitled ***"PREVALENCE OF TORCH INFECTIONS AND HIV IN PATIENTS WITH BAD OBSTETRIC HISTORY"*** *which is being submitted as a thesis for M.S. (Obstetrics and Gynaecology) examination, 2004 Bundelkhand University has been carried out by* ***Dr. Pavna Rana*** *in the department of Obstetrics and Gynaecology, M.L.B. Medical College, Jhansi.*

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CONTENTS

INTRODUCTION

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Pregnancy is a normal physiological state in the reproductive life of women. A pregnant mother where her present obstetric outcome is likely to be affected adversely by the nature of previous obstetric disaster is termed "**bad obstetric history**".

Pregnant woman and her foetus is susceptible to many infectious diseases, some of these may be quite serious and life threatening for the mother and other may have a profound impact on neonatal outcome by a virtue of a high likelihood of foetal infection.

Congenital infections are an important cause of foetal and neonatal mortality and morbidity. They may occur at any time during gestation, and their severity will vary depending on the virulence of the agent, the susceptibility and gestational age of foetus. The main infective agents includes -

1. **Viral infections :-**
   Cytomegalovirus, Herpes, Hepatitis B, Human – Immuno deficiency virus, Papilloma virus, Rubella, Varicella zoster.
2. **Bacterial :-**
   Syphillis, Gonorrhoea, Tuberculosis, Chancroid, Listerea, Streptococcus gp B.
3. **Protozoal :-**
   Toxoplasma gondii, Malaria.

4. Fungal :-

Candida albicans, Cryptococcus.

These infections may result in the following complications –

(1) Congenital malformation of the foetus.

(2) Recurrent pregnancy wastage in the form of abortions, still birth, premature birth.

(3) Low birth weight babies & intrauterine growth retardation.

(4) There may be mental & physical retardation of growth in later life.

The gestational age of the conceptus at the time of infection affects the pregnancy as well as leads to morbidity of intrauterine foetus and neonatal disease in an off-spring.

Rubella causes, German measles a disease usually of minor importance in the absence of pregnancy, and is directly responsible for estimable pregnancy wastage and more importantly for severe congenital malformations. The relation between maternal rubella & grave congenital malformation was first recognized by Gregg (1941) an Australian ophthalmologist.

Cytomegalovirus is a DNA virus mainly affecting central nervous system. It is the most common congenital infection and the most important infectious cause of mental retardation and congenital deafness in the U.S. It serves as a cofactor in HIV disease progression. **Herpes simplex type I & II** can affect the genital areas, and both can lead to neonatal infections of equal

severity. Three fourth of neonatal Herpes infections are of type 2 and one fourth of type I. Recent data suggested that primary infection acquired in IInd – IIIrd trimester is greatest risk to the foetus and newborn and mother's genital tract at the time of delivery is an important source of infection.

Among the congenital infections, **"Toxoplasmosis"** is an important one. Toxoplasmosis is a cosmopolitan disease caused by an obligate intra cellular protozoan "Toxoplasma gondii". In case of intrauterine infection with toxoplasma, risk of transmission of infection to the foetus increase from 15% to 60%. It is maximum in IIIrd trimester but the severity of manifestation is greatest in Ist trimester. However, the consequences of infection in Ist trimester are more serious and include a threat to the foetus with possible spontaneous abortion, prematurity, still birth, congenital anomalies or overt clinical disease with chorioretinitis, hydrocephaly or growth retardation. In contrast, more than 90% of fetal infections acquired in IIIrd trimester are asymptomatic at birth. Such infants may go on to develop chorioretintis, blindness, epilepsy or psychomotor and mental retardation months or years later (Alford et al 1974). The prevalence rates of seropositivity being 3% in United States to less than 10% in Norway & 20 – 40% in Canada.

The reported incidence in quite high in Paris where 75% of women child bearing age have the antibodies. High prevalence was also reported from Brussels. In Denmark 27.4% of pregnant women are toxoplasma antibody positive.

The presence of toxoplasma antibodies in pregnant women in India is reported to vary from 3.3 to 18.9%. Thus the disease occurs in subclinical or clinical form on a large scale in our population which needs to be screened.

In India the variation of toxoplasma seroprevalence was reported from different localities. In north India the prevalence of toxoplasmosis was 18.9%.

In Chandigarh it was reported 8.1%. The prevalence among the women population in Kumaon region was highest (77%). The possible factors involved in the high seroprevalence could be the wild animals which are often in the close vicinity of residential areas & contaminate the environment.

As there are so many hydrocephalus, mental retardation & mental handicaps where the underlying cause is not clear, toxoplasmosis may be one of the aetiological factors for these conditions.

Of the TORCH group of infections, Rubella has a vaccine, herpes and toxoplasma are preventable. There is no vaccine available for CMV and there is no established antiviral agents.

AIMS AND OBJECTIVE

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This study aims to analyse : -

1. Estimation of Toxo IgM, Toxo IgG, Rubella IgM, cytomegalovirus IgM, Herpes IgM in antenatal cases.

2. To find out the incidence of HIV infection in TORCH positive cases.

3. Correlation between HIV and TORCH infection with bad obstetric history. Also to find out the relationship of TORCH infections in relation to age group, parity, socio-economic status and rural or urban background.

REVIEW OF LITERATURE

REVIEW OF LITERATURE

TORCH : Consist of -

Toxoplasma gondii.

Rubella virus.

Cytomegalo virus.

Herpes simplex virus.

TOXOPLASMA GONDII

Toxoplasma gondii is an obligate intracellular parasite with worldwide distribution found both in man & animals. Approximately 3300 infants born every year in the United States are congenitally infected with toxoplosmosis. Most infants are asymptomatic during neonatal period but subsequently develop adverse sequlae. Early treatment reduces the severity of the disease.

Historical Aspect of Toxoplasma gondii :

Toxoplasma was discovered by **Nicole and Monceaux** in 1908 in a small rodent gondii (Clenodactylus gondii) of Africa. Human importance of organism was realized 30 years after i.e. from the year 1939. Although 2 cases were reported in the interval, one in 1914. Castellavi from Srilanka and other in 1923 by Jonku. Toxoplasma gondii was first recognized as a cause of congenital infection and disease by Janku in Czechoslovakia in 1923.

We now realize that it is cosmopolitan in the human population and can cause disease. The importance of the organism as a human pathogen has stimulated a huge amount of research in recent years.

Epidemiology :

Toxoplasma gondii has a worldwide distribution found both in man & animal caused by a small protozoan. Approximately 3300 infants born every year in the United States are congenitally infected with Toxoplasmosis, most infants are asymptomatic during neonatal period. But subsequently develop adverse sequlae. Early treatment reduces the severity of the disease.

Development forms include the oocyst, trophozoites, tissues cyst. Organism reproduce sexually in the intestinal mucosa of cats, the only definitive host to form oocysts, which are excreted in the stool. Oocysts becomes infectious when they undergo sporogony outside the body. Humans are infected following ingestion of oocysts from dried out faeces on tissue cyst from contaminated food especially undercooked meat. High rates are associated with tropical climates, poor sanitary condition, and prevalence of cats.

Pathogenesis :

Following the ingestion of T. gondii trophozoites disseminates throughout the body via the lymphatics & blood stream, organisms invade cells and multiply resulting in tissue destructions cyst containing several thousand slowly growing organisms may develop in any tissue but are common in CVS, Myocardium & skeletal

muscles HIV induced immuno-suppression permits reactivation-dissemination of latent infection.

Clinical Features :

Most human infections are asymptomatic. Clinically it is either acquired or congenital.

(I) Acquired :

A. Cerebrospinal : Common in children, presents as acute meningo-encephalitis.

B. Lymphatic : Present as lymphadinitis of one or more group, fever lasting for several weeks with constitutional symptoms.

C. Exanthematous : Mostly present in adults characterized by acute febrile illness with wide spread maculo popular rashes, diffuse interstitial pneumonia, myocarditis and occasionally meningo-encephalitis.

D. Latent : Does not produce any sign or symptoms and infection is detected by laboratory tests, it is found only in adults.

(2) Congenital Toxoplasmosis :

It results when infection is transmitted trans-placentally from mother to foetus. This occurs only when the mother gets primary toxoplasma infection whether clinical or asymptomatic during the pregnancy. Mother with chronic or latent toxoplasma infection

acquired earlier do not infect their babies. Most infected newborns are asymptomatic at birth & may remain so throughout. Some develop clinical manifestations of toxoplasmosis weeks, months or even years after birth. The manifestation may be chorioretinitis, strabismus, blindness, deafness, epilepsy or mental retardation. A few are born with manifestation of acute toxoplasmosis which may include fever, Jaundice, diarrhoea, petechial rashes. Hydrocephalous, microcephaly cerebral calcifications microphthalmia, cataract, glaucoma, chorioretinits, optic atrophy, lymphadenitis pneumonitis, myocarditis & hepatosplenomegaly.

If mother gets infected during pregnancy it often leads to abortion. If pregnancy continues foetus is so deformed that there may be a still birth.

Diagnosis :

Laboratory diagnosis may be made by **microscopic demonstration** of the parasite by its isolation or by serological tests.

Giemsa stained impression smears of lymph nodes, bone marrow, spleen or brain may occasionally show the trophozoites, which can be readily identified by their morphology. Tissue sections may show the cyst forms.

The commonest method of laboratory diagnosis is by **serology**. Several serological tests are available. These include the Sabin-Feldman dye test, indirect immunofluorescence, indirect Haemagglutination & complement fixation.

The **Sabin-Feldman dye test** is based on the specific inhibition by antibody of the staining of the trophozoite by alkaline methylene blue.

In **direct fluorescent** antibody would be the test of choice in the clinical laboratory provided that the equipment for fluorescent microscopy is available. If the laboratory is not so equipped the alternative serological method would be **indirect heamagglutination test** (Peter G Beach et al 1978).

The **complement fixation test** can contribute in making a serodiagnostic interpretation from a single serum sample but itself is not a good diagnostic method because of long delay, upto two months in becoming positive after exposure (Alexander Macdonal 1950).

All these tests detect IgG antibodies. Demonstration of specific antibody using an enzyme linked immunosorbent assay is easy and accurate method (Van Loon, A.M., et al 1980).

IgM antibody which indicates current infection can be detected by IgM fluorescent antibody assay or a double sandwhich IgM ELISA. However 10-20% of adults which acute toxoplasmosis are IgM negative. Similarly, IgM antibody an be detected only in about 25% of infants with congenital toxoplasmosis.

Treatment :

A combination by **pyrimethamine** 25-50 mg, three to four times a day and **sulphadiazine** initially 2 gm and then 1 gm every 6 hourly for 14 days is given in all cases.

In primary, **Azithromycin** 500 gm 1 BD for 15 days.

Spiramycin 6-9 MIU per day in divided doses for 15 days.

Toxoplasmosis in Pregnancy :

Congenital toxoplasmosis was first reported by **Jocoby and Sagenin (1948)** in Britain. Complement fixing and neutralizing antibodies were present in some apparently healthy women **(Macdonald 1949).**

Sabin and **Feldman (1949)** investigated the dye test and complement fixing toxoplasma antibodies in 3 mothers who had given birth to a child with toxoplasmosis and then a normal child. They found that both types of antibodies were transmitted to the normal infant and almost disappeared after 4 or 5 months, they suggested when a mother has one child with congenital toxoplasmosis her subsequent children are likely to be normal.

Jirovee et al (1959) and Langer and **Geissler (1960)** believed that toxoplasmosis is on of the main infectious cause of repeated abortion in women, other workers believe that women who have congenitally infected child do not have another infected child in subsequent pregnancies, repeated abortion occurs if women developed only an incomplete immunity.

Eckerling, Neri and **Eylan (1968)** studied 40 women with positive serology who previously in 116 pregnancies had produced only 32 surviving infants and after treatment with pyrimethamine and sulphonamide before pregnancy and with tetracycline and sulphonamide during pregnancy and these 40 women had 42 pregnancies with 41 healthy children and one abortion. In the light of more recent knowledge that tetracycline is potentially tetragenic it should not be used.

Desmonts Georges et al (1974) studied 378 pregnant women with high initial toxoplasma antibody titres or sero conversion during pregnancy, 183 acquired the infection during pregnancy, a rate of 6.3 per 100 pregnancies. There were 11 abortion, 7 infants were still born toxoplasmosis occurred in 59 of the non aborted offspring. Severe disease was noted only when maternal infection were acquired during the first two trimesters, later resulted in subclinical or no fetal infection. Treatment with spiramycin during pregnancy reduced overall frequency of fetal infection but not the overt disease. Mothers with antibodies before they became pregnant had no infected infants.

Wilson et al (1980) found that infection late in pregnancy is usually subclinical at birth but of these children most develop convulsion and other neurological sequelae later in life so all pregnant women should be screened for toxoplasmosis and treatment should be given to positive cases.

Beattie et al (1984) suggested that in Britain, where meat is usually well or over cooked prevalence rate of toxoplasmosis are

lower and routine serology would not be cost effective, e.g. in the west of Scotland only 25% of population have antibodies and the seroconversion rate in pregnancy in only 0.2% (Williams et al 1981) compared with 0.4% and 0.6% respectively in French and Belgium studies and the incidence of congenital toxoplasmosis is usually 0.06 per 1000 birth.

Faulen et al (1984) suggested that antenatal drug treatment has some value in preventing transplacental infection when it is known that primary maternal infection has occurred especially in most dangerous early months of pregnancy, he used spiramycin cyclically as a 3 week course one week interval.

Francois Foresties et al (1988) reported a prospective study of 749 documented cases of maternal toxoplasma infection. Infection was diagnosed antenatally in 39 of 42 foeteses, 24 were terminated. 15 mothers were treated with spiramycin. If foetal infection was demonstrated pyremethamine and either sulfadoxine or sulfadiazine were added to the regimen, only 2 foeteses developed chorioretnitis, remaining were clinically well, so it was concluded that prenatal therapy in women who wish to continue their pregnancies reduces the severity of the manifestation of the disease.

Tomba Singh. et al (1992) he took 120 patients of high risk pregnancies and 100 normal pregnancies were studied incidence of maternal toxoplasmosis was 13.3% in high risk pregnancy while it was 4% in normal control group.

Kusuma Saxena et al (1993) studied 150 cases 50 control and 100 test group of bad obstetric history was 27%. Maximum positive cases were found in age group of 21-30 years, almost equal incidence of positive cases in rural & urban population. Positive cases were more non vegetarian and in patients who had history of contact with cats. The positivity was 26.2% in abortion cases 30.7% in cases with history of premature labour, 25% cases with history of still birth and 33.3% in cases with history of congenital malformation.

Berrebi A. et al (1993) has done prospective study of 176 cases to determine the value of antenatal diagnosis of congenital toxoplasmosis by ultrasound guided aspiration of cord blood for testing. As well as obtaining fetal blood and amniotic fluid and searched for specific IgM and culturing for the parasites on human fobroblasts and inoculation of mice, as well as researching them for non-specific signs of fetal infection. 149 children were able to be followed up one year after birth. 15% of the children (22/149) were infected with toxoplasmosis. 11 out of these were diagnosed positive antenatally. For the 11 others the diagnosis of fetal infection could only be made after birth, but the non-specific signs made it possible to expect early that they had been contaminated. 59% (13/22) had latent toxoplasmosis which only showed up after a mean interval of 34 months after birth. 41% (9/22) had clinical and/or paraclinical signs of toxoplasmosis (mainly unilateral non-macular chorioratinitis and intracranial calcifications) but they are well after a follow-up period averaging 30 months. Ultrasound alone, when it shows up fatal abnormalities, can make the diagnosis of the severity of the condition. The role of taking fetal specimens

is to make clear those infants that are infected because of specific signs, and to find those featuses which are at high risk because of non-specific signs in order to improve the management of the cases. This development has made it possible to avoid carrying out a large number of unnecessary terminations of pregnancy and has resulted in the birth of affected infants that had no functional sequalae from the infection.

Portlong, F. et al (1994) estimated high incidence of 0.5 to 1.5% and 30 to 50% of V in pregnancy. Among the studied 190 women, two third by seroconversion of toxoplasmosis antibody status and one third by rising IgG titre plus the presence of IgM, risk of infection was 4%, 17% and 53% respectively in first, second and third trimester, so antenatal screening is cost effective.

F. Pratiary et al (1995) studied a cohort of 286 antenatal patients for toxoplasma antibodies, 40 were positive he concluded importance of making diagnosis of toxoplasmosis antenatally in order to limit the number of medical abortion.

RUBELLA

Historical aspect of Rubella :

Clinical Rubella (three day measles or German measles) was first discovered in Germany about 200 years ago and was called Rothelin. In the late 1930's the viral agent was transmitted to man and monkeys, but was considered an inconsequential disease until 1941 when Gregg, an Australian ophthalmologist discovered the teratogenic property of rubella. He observed a sudden increase in congenital contract in infants and related it to maternal rubella.

Rubella virus was isolated in tissue culture in 1962 independently by two group of workers (Weller and Neva Parkman, Bueschan and Arkenstien). In 1969, the first rubella vaccine was licenced in United States.

Thus in a relatively short time cause of neonatal rubella was identified, pathogenesis explained and a preventive measure created and then public health measures reduced the incidence of disease.

Structure and properties of Rubella

Rubella is a RNA virus of Togavirus group, contains heamagglutinins. There are several stain of the virus, the virus is readily inactivated by heat and chemical agents. The viral particle is roughly spherical 50-70 nm in diameter surrounded by envelope. It is inactivated by ether, chloroform and formaldehyde. It is destroyed by heating at 56^0C but survives for several years at 60^0C.

Clinical Infection by Rubella virus during pregnancy :

Infection takes place though the nasopharynx, after that virus incubates in the lymphnodes for 15-21 days (20 days inculation pd), which is followed by prodromal viraemia marked by coryza, malaise and low grade fever.

This is followed by discrete maculopapular nash appearing first on face than spreading to neck trunk and disappears by 3rd day.

However about half to two third of cases of Maternal rubella are clinically inapparent.

Immune phenomenon in the body :

Anti-Rubella IgG antibody of maternal origin are transferred transplaceltally to the developing foetus. In event of in-utero infection immune response in the form of rubella specific IgG antibodies is seen for duration of two months in the foetus. It may last upto a year this is followed by IgG antibodies response which can last for around 10 years. Maternal IgG transfer across the placenta generally last for 6 months. In general it can be said that cases negative for antibodies are always at risk and cases positive for antibodies remains protected for a minimum of 10 year **(Khare et al 1987, Bhaskanan et al 1991).**

Diagnosis of Rubella :

The other store for the diagnosis of maternal rubella infection is serologic using.

Most widely used test being.

Haemagglutination inhibition Test. It is time consuming and complex and being replaced by newer methods namely :-

- Solid phase enzyme linked immnosorbent assay (ELISA).
- Passive Haemagglutination (PHA)
- Immunofluorescent assay (IFA)
- Radial immunodifussion test (RID).

Contribution of rubella to bad obstetrics :

Maternal rubella in the first trimester of pregnancy is likely to result in birth of a malformed baby or induction of spontaneous abortion. Such sequalae of congenital rubella as gross cardiac lesions, hepatitis, Meningoencephalitis and interstitial pneumonia are often fatal to infants. Other such as pancytopenia, retinopathy, hepatosplenomegaly, Lymphadenopathy and bone lesions are usually self limited and seems to pose no long term risks. In adult who have survived congenital rubella major handicap with psychomotor, perceptual and cardiac abnormalities as less common complication.

The original concept of congenital rubella syndrome consisting of the triad of contract, congenital heart disease and deafness in the new born is no longer accepted as the only evidence of rubella infection (Marshal 1973).

Criteria for diagnosis of Congenital Rubella Syndrome :

Have been laid down by centre of disease control, Atlanta Georgia in two categories. These are –

1. A confirmed case which shows a congenital defect typical of congenital rubella syndrome. This can be followed by either isolation of rubella virus or rubella specific IgM antibodies and a persistently high HIA.

2. A comparable case which has sufficient laboratory data, associated with two of the congenital malformations, cataract, glaucoma, patent ductus arteriosus, deafness or lymphdenopathy.

Rubella vaccination :

In 1969, two vaccines were licenced in United States, the HPV 77- DES and cenderhill strain. HPV 77 was most commonly used vaccine until it is replaced by RA 27/3 in 1979. RA 27/3 mimics natural rubella better and more consistently than other vaccines. It is a live attenuated vaccine and is contraindicated in pregnancy however; the risk of foetal infection after vaccination is between 3% to 5%. Vaccine produces seroconversion in 95 to 98% of susceptible individuals and causes symptoms resembling mild rubella in 10% to 15% of recipient.

CYTOMEGALOVIRUS INFECTION

Cytomegalo virus is a ubiquitous D.N.A. virus belonging to the family of human herpes virus, that includes herpes simplex virus, Ebstein barr virus, varicellazoster virus. The virus ranges in size form 180 to 250 nm in diameter and has a genome in the range of 150 million daltons.

Epidemiology :

Most people are infected with CMV some time during their life. Antibodies to CMV have been detected in over 90% of homosexual men and 60% of women attending sexually transmitted disease clinics in the United States. Cytomegalovirus can be cultured from saliva, semen, vaginal secretions, blood or infected tissues.

CMV infection can be acquired at the time of vaginal delivery. Another common route of infection is breast feeding. Virus is transmitted in the breast milk of 25.7% of women with serologic evidence of CMV-infection.

Other potential route but rare source of infection is introduction of virus into foetal blood stream or amniotic fluid during intrauterine transfusion or amniocentesis.

Severe congenital infection :

Infants born with severe congenital infection exhibits hepatosplenomegaly, thrombocytopenia with petechiae & purpura,

hepatitis associated with icterus, pneumonitis and chorioretinitis, abnormality that results from faulty neurologic development includes microcephaly, optic atrophy,Aplasia of various parts of brain and microphthalmia. Incidence of foetal growth retardation is 30-40%. The presence of intracranial calcification is an indication that the infant will have at least moderate to severe retardation. Mental retardation affects 95% of new born with severe infection, auditory deficiency is the most common handicap affecting 25% of congenitally infected new borns.

Diagnosis :

1. **Culture :** the gold standard for the diagnosis of CMV infection is the viral culture. Virus can be cultured by conventional technique or by the shell viral methods. Culture for CMV is expensive and virus may require up to three weeks to grow.

2. **Histology :** Histologic examination of biopsy specimens may demonstrate typical CMV inclusions, tissue necrosis or both. Definitive histologic diagnosis of CMV infection requires the presence of characteristic 'OWL's eye cells with cytomegaly and large intranuclear or intracytoplasmic inclusions surrounded by a halo. Immunofluroescent staining of frozen section using an anti CMV monoclonal antibody may facilitate diagnosis and increase the sensitivity of cytologic examination.

3. **Serology :** serologic tests are useful in the diagnosis of acute infection characterized by IgM antibodies. Recurrent

infection is characterized by at least four fold increase in IgM titres. Antibodies may be absent in AIDS patients with severe CMV infection and a negative titre does not excludes the possibility of active disease, there fore serologic testing for CMV is of little diagnostic utility in HIV infected patients.

4. **Treatment** : Cytomegaloviral infection is neither preventable nor curable. Efforts are being made to produce a vaccine. Antiviral agent gancyclovir is a potent inhibitor of CMV replication. The medication is available only for intravenous administration and has significant toxicity.

Reynolds et al (1974) suggested that some of the estimated 1 in 1000 cases of unexplained profound deafness in American children may be caused by congenital CMV infection.

Lawrence Hatherley (1985) said 12 neonates in 47,320 consecutive births cytomegalic inclusion disease confirmed by viral studies, an incidence of approximately 1 in 4000 deliveries, further 4 cases were diagnosed in 738 (1 in 185) neonates for intensive care. Congenital CID was diagnosed in 12 to 16 neonates and post natal infection in remaining 4 infant, the sexes were equally represented which included 1 set of twin. Five deaths occurred in hospital between 6 hours and 135 days of delivery. 112 infants were discharged for follow up and 7 showed CMV infection.

Griffithe and **Babrobain (1992)** pointed that foetal loss occurred in 4/25 (5%) of early CMV infection. The transmission of CMV from mother to foetus in early pregnancy is very high.

Transmission of CMV = Transmission of HIV – 1 in 8 weeks foetus.

They are suggested that potential CMV carrier may transmit CMV to their foetus in early pregnancy. The rate of CMV IgM is 5.6% but the incidence of congenital CMV infection of chronic villi in early pregnancy was 23.5%.

Chiba (1992) said congenital CMV infection after secondary maternal infection, common in Japan. Did not describe the route of infections whether hematogenous or ascending or in the birth canal (Chibe, et al 1992, Ahlfors et al 1993).

In patients, post transfusion infection could be excluded since the infant was positive for anti CMV IgM before receiving transfusion, the breast milk was doubtful source of infection since the period of incubation is too short for seroconversion. Transmission through birth canal is unlikely by caesarean delivery, CMV had ascended from vagina via ruptured membrane to reach the deciduas or amniotic fluid. The foetus then aspirated the virus to develop a congenital pneumonia.

HERPES SIMPLEX VIRUS

Herpes simplex virus is of major obstetric interest because it is one of the most common sexually transmitted diseases and because of its potential to cause severe foetal and neonatal infection.

Epidemiology :

HSV belongs to the herpes virus family who have the ability to persist through out the life of their host to produce recurrent infection. Primary infection occurs 2-12 days after the introduction of the infectious secretions in to the oral cavity (HSV-1) genital area (HSV-2) skin or eyes 50% of adult have antibodies to HSV with a higher prevalence in certain population including male homosexual and those from developing countries.

Clinical Features :

In Infants :

1. **Acute gingivostomatitis :** Common age of occurrence is of 10 months to 3 years, onset is abrupt with fever, generalized malaise, irritability and soreness of the mouth lesions are seen just inside the lips. After healing mucosal lesions do not reoccur but skin lesions may reappear over a period of many years, these vesicles are called cold sores, common precipitating cause of recurrence is febrile illness, trauma, and exposure to sun light.

2. **Genital Herpes :**

   Vulvovaginitis : In female infants HSV may be the cause of vulvovaginitis typically there are herpetic eruption around the vulva area becomes inflamed and painful. In males there may be herpes of glans penis.

3. **Infection of the eye :** The most common herpetic infection of the eye in infants is acute oedematous conjunctivitis with chemosis and stickyness of the lids. The preauricular lymphnodes are enlarged and tender. Corneal involvement leads to formation of dendritic ulcer and loss of vision.

4. **Skin Infection :** Eruption involves any area of the skin, common are napkin area of the skin.

5. **Meningitis :** It may be the rare cause of meningitis.

6. **Acute generalized infection :** Neonatal infection with HSV is often life threatening and causes severe morbidity amongst some infants.

Genital herpes simplex in pregnancy poses a risk for transmission of infection to the foetus at birth during prolonged rupture of membrane as well as possibly a risk for congenital malformation of the unborn. In late 1960 it was discovered that there are types of herpes simplex virus infecting humans. Type-1 causes a majority of oral infection and type-II causes genital infection, with either type is often asymptomatic but often gives a long lasting IgG response. Neonatal infection with HSV is often life

threatening and causes severe morbidity among some infants (Whitley et al 1980 Stone et al 1988). Genital herpes in pregnancy are associated with increasing foetal and maternal morbidity and mortality (Nahmians et al 1971). HSV has been reported to increase spontaneous abortion and neonatal death in this study comparing the pregnancy out come of 15 patients with primary genital herpes and 14 with non primary 1st episode disease complicating pregnancy. 6 of the 15 (40%) patients with primary infection developed a serious obstetrical and perinatal complication.

Adverse out come increased with advancing gestation with 1 of the 5 cases in 1st trimester, 1 of the 5 cases in second trimester and 4 of the 5 cases in third trimester demonstrating 1 or more of these complications.

HUMAN IMMUNO DEFICIENCY VIRUS INFECTION

The human immuno deficiency virus is the cause of acquired immuno deficiency syndrome (AIDS), a condition that affects hundreds of thousands of individuals in the United States and many more throughout the world. The demographics of this disease are changing, and HIV is infecting a growing number of women of reproductive age. As a consequence, the number of infants born to HIV-infected mothers is also rapidly increasing.

Virology :

There are five known human retroviruses (HIV-1, HIV-2, HIV-I, HIV-II, and HIV-IV), and three of them are associated with human disease. HIV-1 and HIV-2 cause AIDS, and HIV-I most probably is the causal agent of T-cell leukemia/lymphoma. HIV-I, the most common cause of AIDS in the United States, has an envelope formed by three glycoproteins (gp160, gp120, and gp41) surrounding a core that contains other proteins (p55, p40, p24, p17), reverse transcriptase, and endonucleases.

Attachment of the virus to the host cell is a critically important step in the mechanism of infection. The virus only infects susceptible cells that express in their surface a glycoprotein called CD4. CD4 is recognized by the glycoprotein gp120 that is present in the viral envelope. The best-known susceptible cells in humans is the CD4 or T4 helper-inducer T lymphocyte. Invasion and eventual destruction of these cells by the HIV-I virus will cause the profound alteration in the immune system that is characteristic of AIDS.

Once inside the cell, retroviruses follow a unique reproductive cycle that involves reverse transcription of their ribonucleic acid (RNA) into deoxyribonucleic acid (DNA), incorporation of the newly synthesized DNA into a host cell DNA, transcription of the viral components. The viral DNA may remain incorporated into the host cell DNA for prolonged latent periods until viral synthesis is activated. What conditions until viral synthesis is activated. What conditions initiate viral activation is unclear.

Maternal infection :

Women account for approximately 10% of AIDS cases. The large majority of them are black or Hispanic and between 15 and 35 years of age. Most of them are intravenous drug abusers, have multiple sexual partners, and have intercourse with partners at high risk.

Maternal HIV is acquired primarily by sexual contact or by parental exposure to blood or blood products. Most sexual transmission is the result of receptive vaginal or anal intercourse with infected partners. Transmission by exposure to blood or blood products is usually the result of needles or syringes being shared between intravenous drug abusers. Rarely, maternal infection results from the administration of blood or blood products, especially if they were received before April 1985 when individuals from high risk groups were not excluded as donors.

The initial infection with HIV is asymptomatic. Serologic evidence that infection has occurred may be obtained 2 to 8 weeks after the initial infection, but in some cases it takes up to 6 months

followed by Western blot analysis. Western blot detects antibodies against glycoproteins p24, p31, gp41, and gp160. The presence of antibodies against these structural and envelope proteins is a reliable indication of infection. Results of the Western blot are given as positive, negative or undetermined. The probability of a false-positive diagnosis is almost nil if two ELISAs and one Western blot are positive. Once the presence of infection has been demonstrated, it is possible to use determination of CD4 cells to assess the severity of the immunologic dysfunction.

Viral cultures and PCR may be used for diagnosis of HIV under special circumstances. Cultures are labor intensive, expensive, and less sensitive than serologic testing. PCR is a very sensitive technique that has the potential to become the test of choice for the diagnosis of HIV infection.

Fetal transmission :

Approximately 24% of infants born to HIV-infected mothers will demonstrate the presence of the disease by 1 year of age. It is not clear if the infection is transmitted during pregnancy, during delivery, or shortly after birth, although there is evidence that fetal infection may occur by transplacental transmission, by contact with infected secretions, and through breastfeeding.

Significant effort has been directed to the identification of factors predictive of fetal infection. Once of these factors is the previous birth of an infected child. Another is severely depressed immune function as shown by low CD4 counts. The presence of maternal antibodies against certain epitopes or against the principal

neutralizing domain of the envelope protein gp120 is also predictive of the absence of new born infection.

The majority of babies born to HIV-positive mothers have no physical signs of infection. A few of them may exhibit the so-called HIV embryopathy characterized by growth retardation, microcephaly, and craniofacial abnormalities. All infants of HIV-infected mothers have positive HIV serology as a consequence of passive transfer of maternal antibodies. Levels of these antibodies decline gradually, and by 6 months of age, most noninfected newborns will be seronegative. The presence of positive serology resulting from passive transmission of antibodies makes difficult the diagnosis of HIV infection in the newborn. In this situation viral cultures and PCR testing should be done to confirm or rule out infection.

EPIDEMIOLOGICAL ASPECTS

Global distribution of HIV :

The epidemiology of AIDS in developed countries in Western Europe, North America has recently been received by Alder 1988.

WHO estimates that by 1993 more than 2.5 million adult full blown cases may have occurred world wide, although AIDS was first recognized in USA in 1981, earlier case were found by retrospective analysis to have occurred in 1978 in the USA and in the late 1970's in equatorial Africa (WHO 1986).

The number of AIDS cases gives a forecast rather than a true reflection with a virus that takes many years to causes illness.

An explosion of HIV has recently occurred in South East Asia, particularly in Thailand, Burma and India where with in only a few years over two million people may have already been infected, during the next decade HIV is likely to reach most of the communities around the world and geographic boundaries cannot protect against HIV.

HIV infection in India

The first group of seropositive individual in India detected in April 1986 were ten prostitutes, with in short span of 18 months it became obvious that the seropositivity rate was low 4/1000 and heterosexual promiscuity was the major mode of transmission in India (ICMR).

As the contraceptive use is quite low and birth rate continues to be high in India, it is therefore not surprising that pregnancies among seropositive women were reported in 1986 itself, first seropositive pregnant mother was detected in Sept. 1986 (ICMR). First seropositive infant was detected in 1987.

Till Nov-Dec. 1990 out of 44 Indian AIDS patients reported to ICMR, 8 were women.

No patients of paediatric AIDS was reported till Dec. 1990.

1st Dec. is being observed as world AIDS day since 1988. 1990-91 being observed as ***"women and AIDS"*** with following aims.

To continue to increase awareness about HIV/AIDS.

To strengthen the world wide efforts to stop AIDS by highlighting the impact of HIV/AIDS in women the world.

AIDS Surveillance :

Govt. Of India has established a network of surveillance centres in the country to screen high risk group (Govt. of India 1991). This includes establishment of nine referral centres (e.g. National institute of virology Pune, Christian Medical College Vellore, All India Institute of Medical Sciences, New Delhi and National institute of Communicable Diseases, Delhi) where higher level diagnostic facilities are available. By the end of 1992, Govt. of India has established 62 surveillance centres for screening persons practicing high risk behavior. Realizing the gravity of epidemiological study of HIV in the country a separate wing "National AIDS control organization" has been set up under the Ministry of Health and Family Welfare.

Jovaicas et al (1985) gave termination of pregnancy in an antibody positive women at wks gestation and foetal sample were found to contain HIV, So HIV seropositive among pregnant women is therefore a great risk to unborn child.

Gloeb et al (1988) report of 50 HIV seropositive pregnant women found that 35 seropositive women have complicated perinatal courses and most commonly premature labour or infections complication. Premature labour complicated 35% of pregnancies among HIV infected women.

Glaeb and colleagues (1988) followed the clinical course of 50 HIV infected women ante partum and or post partum. Three patients died of complications related to AIDS. Two of these were asymptomatic when first seen in the course of their pregnancy and two developed pneumocystis carnii pneumonia and died during pregnancy and third developmed toxoplasma gondii encephalitis at 18 weeks gestation and died four months after delivery. Another two patients developed AIDS related symptoms in the third trimester.

Jean Pape (1988) obtained information about sexual activity on 151 HIV seropositive and 131 seronegative spouses of male AIDS followed from 1983 to 1986. As a result 14% (22/151) of the seropositive sex partner have become pregnant during a mean period of follow up of 15 months (range 2-36 months) and 18 months (range 2-38 months) respectively. 27% of the seropositive pregnant women (6/22) had a miscarriage compared to 13% of the seronegative pregnant women.

Embers (1989) studied HIV infection on foetus growth failure may be seen in 75% or more of infected infants it has been suggested that deformities including microcephaly, ocular hypertension, prominent forehead, flat nasal bridge long palpebral fissures, and blue sclera and patulous lips may be associated with congenital infection, however, the relationship of these features to HIV infection has been challenged.

Lakshmi & Gururaj kumar (1989) studied 2 pregnant women, one of 400 were found to be seropositive for HIV antibody

by ELISA, the positive rate being 0.5% both of them were primigravida in mid term. pregnancy came from urban area and belonged to low socioeconomic status. There was also history of multiple sexual partners, drug abuse, and blood transfusion in the past and their husbands had history of STDs.

Kell et al (1991) reported a 26 year old Ugandan woman presented 10 weeks gestation in her second pregnancy to a direct general hospital causality department complaing of shortness of breath or excretion, fever and productive cough for 1 week, six year back she had an uneventful pregnancy, as she had arrived in British as a political refuge. Only two weeks before initial physical examination revealed tachypnoea (70/min) and pyrexia. Her chest x-ray was suggested of an interstitial pneumonia. Arterial blood goes on air showed a po2 of 10.0 kpa. She was treated with intravenous ampicilline and erythromycin for 3 days, she continued to deteriorate. A blood sample was taken to test for HIV antibody after the patients was conselled the result was found to be positive. This case represents to be reported in Britain, diagnosis of HIV seropositivity affect the outcome.

Johnstone et al (1992) believes that the pregnancy is associated with mild impairment of cell mediated immunity and increased virulence of some infections.

European collaboration study group (1992) demonstrated in 30 Nov. 1992. 1200 mother child pairs were enrolled (19 European centres). Children with known HIV infection (born to women with HIV positive antibody at or before the delivery) status were

available for present analysis. All multiple pregnancies and children whose HIV infection status was still indeterminate were excluded. 3 months were known to receive Zidovudine during pregnancy and all 3 infants were uninfected.

Caroline et al (1994) said that at least two hypothesis can be suggested for the effect of pregnancy on HIV diseases progression, first the short term risk of developing AIDS or HIV related disease may be much higher during pregnancy, with no residual excess risk once the pregnancy is over. The immediate risk of developing AIDS returns to what it would have been if the pregnancy has not occurred, alternately pregnancy might accelerate HIV disease progression irreversibly leaving women who have been some time if the pregnancy have never occurred multiple pregnancies would produce a cumulative detrimental effect on risk.

Corelation between TORCH and HIV infection

Corelation between HIV and Toxoplasma :

Women infected with HIV are at risk for transmission of Toxoplasma Gondii infection to the foetus both of they are seronegative for T. gondii antibodies and acquire T gondii infection during pregnancy and if they are seropositive for T gondii antibodies and suffer reactivation of their latent T gondii infection because of immune deficiency from HIV infection.

Mitchell et al (1990) revealed a congenital transmission rate for women who are dually infected with HIV and T gondii that was remarkably higher when compared to non HIV infected, Toxoplasma seropositive pregnant women.

All infants with congenital Toxoplasma born to mother who were HIV infected also were infected with HIV.

The initial clinical presentation of congenital Toxoplasma in HIV infected infants is similar to that and non HIV infected infants but appear to run a more rapid and progressive course. The infants often appear normal at birth. In the ensuing month, they fail to gain weight or develop opportunity. The majority develop, multisystem organ involvement including CNS, Heart, Lungs.

Corelation between Toxoplasma and Rubella :

Chitra Raghunandan (1993) said the present study was conducted in 25 cases of missed abortion between 6-20 weeks of gestation and 25 cases of unexplained intrauterine death between 21-40 weeks of gestation, 25 cases of MTP and 25 cases of normal pregnancy were taken as control. Their sera were tested by ELISA for IgM specific antibodies to Toxoplasma gondii and rubella.

The 50 cases of study group, 16 cases (32%) showed antibodies to Toxoplasma, (6 cases) Rubella, (1 case) and Syphilis (9 cases) as compared to all the control cases with more than one etiological agent. All 6 cases seropositive for Toxoplasma as well as 1 case of Rubella were associated with missed abortion were 8 cases out of 9 cases of Syphilis associated with late foetal death.

Correlation between Toxoplasma gondii, Rubella, Cytomegalo virus and Herpes simplex virus :

P. Prabhaker (1990) seroprevalence of Toxoplasma gondii, Rubella virus, Cytomegalo virus and Herpes simplex virus infection and Syphilis were determined in order to assess and the immunosusceptibility foetus in American Pregnant women in 1986 the positive rate were 57% (T gondii), 69% (Rubella), 97% (CMV), 91% (HIV) and 4.9% (Syphilis) respectively. The rate of reactivity for syphilis ranged from 2.1% in the Kingston and St Andrew at 7.3% in rural parishes. The seropositivity for syphilis ranged from 21% and the seropositive rate for Rubella was over 50% in parishes, the highest being 85% in St Thomes.

The seroprevalance of T. gondii was lowest in Trelawny (37.5%). There were no significant differences in seropositivity of CMV and HSV infected women in various parishes.

MATERIAL & METHODS

2. Occupational status was considered in order to know socio-economic status of the patient.
3. Educational status of each patient was asked.
4. Dietary history was asked whether vegetarian or non vegetarian.
5. History of any addiction e.g. smoking alcohol, tobacco was asked.
6. History of present illness was elicited. An inquiry was made about the duration of pregnancy and onset of sign and symptoms in relation to period of amenorrhoea.
7. Past history of fever, lump in body, rashes, any eye complaints, cough, jaundice, diabetes, hypertension was enquired.
8. Family history of diabetes and hypertension was inquired.
9. Obstetrical history, previous obstetrical history was taken.
    - Total number of time patient has conceived
    - Total number of full term pregnancies
    - Abortions - duration of pregnancy at time of abortion, type of abortion.
    - Congenital Malformation- discovered by ultrasonography or by receiving product of conception or foetus.
    - Premature delivery
    - Still birth
    - Number of living children and last child birth or abortion
    - Mode of deliveries, sex, weight of babies and condition of babies at birth and at present were noted.

10. Menstrual history- Date of last menstrual period was asked and expected date of delivery was calculated.

11. Drug history - any treatment taken in past for any medical disease or for pregnancy losses.

EXAMINATION OF THE PATIENTS :

1. **General Examination :** Though general examination was done with special attention to pallor, blood pressure, lymphadenopathy, temperature.

2. **Systemic Examination :** Brief systemic examination of cardiovascular system, respiratory system, central nervous system and of gastrointestinal system was done. This was to exclude any systemic disease.

3. **Obstetrical Examination :** Though obstetrical examination was done as fundal height, lie, presentation and fetal heart rate.

4. **Per Vaginal Examination :** It was whenever necessary as for confirmation of pregnancy in first trimester and when patient complained of pain during pregnancy.

INVESTIGATIONS :

During the first visit the following investigations was done :

1. Haemoglobin percentage estimation was done.
2. Total leucocyte count, differential leucocyte count and erythrocyte sedimentation rate was done to diagnose any infection.
3. ABO and Rh grouping was done because ABO, Rh incompatibility is one of the important causes of BOH.

4. VDRL was done in each patient.
5. Complete urine examination routine for albumin and sugar and microscopic for pus cell, RBC or any cast.
6. Fasting and post prandial blood sugar examination was done in each patient.
7. Ultrasound examination of lower abdomen was done in each patient.
   - To see for any congenital malformation of uterus e.g. double uterus, septate uterus etc.
   - To know about any uterine disease e.g. fibroid uterus.
   - To know gestational age of foetus.
   - We can exclude gross congenital malformation of foetus by ultrasonographic examination and for foetal well being.

Collection of Blood Sample :

For ELISA test 5 ml. Of blood was taken out from the antecuboital vein under all aseptic precautions and transferred to a clean sterile test tube and was kept upright for an hour at room temperature when the serum was separated it was poured into 1 centrifuge tube and centrifugation was done at 3000 rpm for about 5 minutes the clear supernatant serum was separated and kept in small glass tube at 40 ^{0}C until use.

Hemolysed samples were discarded.

MICROELISA STRIPS FOR Quantitation of IgG anti Toxoplasma gondii antibody.

ELITORCH TOXO IgG is a sandwich enzyme linked immunosorbent as say for the quantitative estimation of IgG antibodies to Toxoplasma gondii in serum.

PRINCIPLE :

This solid phase ELISA test consist of Microtitre strips coated with Toxoplasma antigen (Toxoantigen). If the patient's serum/control has the relevant specific anti- Toxoplasma gondii antibodies they bind to Toxo antigen on solid phase. After washing the bound antibodies are sandwiched using HRPO labeled antigen human IgG HRPO labelled antihuman IgG conjugate complex.

The unbound conjugate is removed by washing and the enzyme linked sandwich complex is revealed by chromogenic substrate. The intensity of the colour developed is directly proportional to the amount of IgG Toxoplasma gondii antibodies in the serum. After stopping the reaction with stopping solution, absorbance is measured at 450 mm using ELISA reader.

Results of patients samples are obtained by calculation / comparison using the low medium and high positive controls provided.

1. Microtitre strips (8 well strips) coated with Toxoantigen (12 strips).
2. Sample dilution buffer : ready to use – 100 ml.
3. Negative control : ready to use – 2 ml.
4. Cut – off control (5 iu/ml) : ready to use – 2 ml.
5. Low positive control (30 iu/ml) : ready to use – 2 ml.

6. Medium positive control (100 iu/ml) : ready to use – 2 ml.
7. High positive control (200 iu/ml) : ready to use – 2 ml.
8. Wash buffer concentrate (50 ml).
9. HRPO labeled antihuman IgG conjugate – 11 ml.
10. TMB solution – 1.5 ml.
11. Substrate buffer – 25 ml.
12. Stopping solution – 11 ml.
13. Strip holder – 1.

STORAGE AND STABILITY :

The reagents are stable up to the stated expiry date when stored at 2-8 ^{0}C.

Preparation of working solution : -

*** Working wash solution**

Mix :

Reagent 8 (wash buffer concentrate) 1 volume

Distilled water

The working wash solution is stable for one week at 2-8 ^{0}C.

*** Chromogenic substrate solution :**

Mix :

Reagent 10 (TBM) 1 Volume

Reagent 11 (substance solution) 20 volumes

Prepare only the required volume at the time of use.

* Microtitre strips coated with Toxo antigen immediately after removal of strips; reseal the remaining strips along with the desiccant and store at 2-8 ^{0}C.

*** Sample Preparation :**

Mix :

Patients serum – 10 IU/ml

Sample dilution buffer – 1 ml

Serum Samples may be diluted at the time of use and stored at 2-8 ^{0}C before using for the day.

PRECAUTIONS :

- Reliability of the result depends on strict adherence to the procedure described in the insert.
- Do not use reagents after expiry date stated on the label. Do not interchange reagent vials and their caps to avoid cross contamination. Take the required amount of reagents from vials and close immediately after use to avoid evaporation.
- Reagents 2, 8, 10, 11 and 12 are interchangeable between lots. All other reagents are specific for individual package and must not be interchanged with other lots. No reagents of other manufactures should be used along with the kit reagent.

PROCEDURE :

Bring all reagent samples and controls to room temperature before use. Prior to commencing the assay, the distribution and identification plan for all specimens and controls should be carefully established on the form supplied with the kit. Select required number of microtitre strips and place in a holder.

Allow one well for substrate blank and two well for each control.

Dilute patients sera as described in sample preparation.

Do not dilute controls.

Step 1 – Leave well AI for substrate blank. Pipette controls and samples in the following order.

Wells B1/C1-100 ± 1 Negative control.

Wells D1/E1-100 ± 1 Cut-off control.

Wells F1/G1-100 ± 1 Low Positive control.

Wells H1/A2-100 ± 1 All medium positive control.

Wells B2/C2-100 V High positive control.

Wells D2 onwards-100 V 1 diluted samples.

Cover the Wells with foil adhesive film.

Step 2 - Incubate for 30 minutes at room temperature (15-30 ^{0}C).

Step 3 - Aspirate all contents of wells in to disinfecting solution (eg 5% sodium hypochlorite).

Wash the wells 4 times with 400 ± 1 of working wash solution each time and aspirate off. At the end carefully remove remaining fluid by tapping the strips on tissue paper prior to next step.

Step 4 - Dispense 100 ± 1 of HRPO labelled antihuman IgG conjugate into all wells except the substrate blank (A1) cover wells with foil or adhesive film.

Step 5 - Incubate for 30 minutes at room temperature (15-30 ^{0}C).

Step 6 - Wash the wells 5 times as described in steps.

Step 7 - Dispense 100 ± 1 of chromogenic substrate solution to all the well including A1.

Step 8 - Incubate for 30 minutes at room temperature in dark.

Step 9 - Stop the enzymatic reaction by adding 100 ± 1 of stopping solution to each well and read with in 30 minutes.

Step 10 - Read the absorbance at 450 nm (A) after setting the ELISA reader to zero, using the substance blank in the first well (A1).

CALCULATION :

1. Calculate the mean absorbance reading of negative control (MNC).
2. Calculate the mean absorbance reading of cut-off control (MCC).
3. Calculate the mean absorbance reading of medium positive control (MMPC).

The test run may be considered valid provided the following criteria are met :

(I) The substrate blank in well A1 appears almost colour less to the eye.

(II) MNC<MCC

(III) MMPC 0.750

(IV) The ratio of MMPC to MNC 2.

INTERPRETATION OF THE RESULTS :

Test samples with absorbance values greater than or equal to the MCC are considered Positive for Ig G antitoxoplasma gondii antibodies. Test samples with absorbance values less than the MCC are considered negative for Ig G anti- toxoplasma gondii antibodies.

If an ELISA reader is not available a visual interpretation of the results is possible.

A specimen can be considered positive if the colour intensity of the sample well is equal to or stronger than the colour intensity in the cut-off control wells D, and E.

QUANTITATIVE ESTIMATION :

(1) Read the absorbance of controls and test samples at 450 nm against the substrate blank.

(2) Using graph paper plot the absorbance on the vertical axis and the concentration of controls on horizontal axis. The anti Toxoplasma gondii antibody in the specimen can be interploted from the curve.

ELISA TEST FOR OTHER TORCH INFECTIONS ARE DONE IN SIMILAR MANNER.

Laboratory diagnosis of HIV infection :

HIV infection has a long incubation period and asymptomatic stage, many psychosocial issues and problem arise subsequent to diagnosis of HIV status, hence both false positive and false negative test results are likely to have undesirable

consequences. There is neither a cure nor a vaccine available as yet for HIV infection/AIDS. All these reasons combined results in the importance of the laboratory investigation in the diagnosis of HIV infection.

OBJECTS OF HIV TESTING – In this study HIV testing is done in Antenatal cases, which are positive for TORCH infection.

Performance characteristics of the test used criteria for selection of a diagnostic test depends on the following.

1. High level of sensitivity, specificity and predictive value.
2. Long shelf life at ambient temperature.
3. Cost effectivity.
4. Rapidity of cases of performance.

Specimen imployed for laboratory diagnosis of HIV infection

The various types of specimens that can be utilized for diagnosis of HIV infection and the suitable laboratory procedure are mentioned below.

SPECIMEN	LABORATORY PROCEDURE
Blood/serum/plasma Saliva Urine	Anti body detection
Serum/Plasma CSF/cell culture supernate	Antigen detection
Blood (PBN cells) Serum vaginal/Cervical specimen Tissue CSF	Virus isolation PCR

Plasma Less commonly Saliva, urine, Brest milk Tears, Amniotic fluid	

Interpretation of HIV antibody assay

(A) 'A positive test' may indicate -

1. Infection with HIV
2. False positivity

(B) 'Negative test' may indicate

1. Absence of infection
2. Failure of the test system or
3. Failure in detecting early (<3 months) HIV infection.

SCREENING TESTS :

(A) ELISA (Enzyme Linked Immunsorbent Assay) (2-3 hours)

It is the most commonly performed test to detect HIV infection.

There are various kinds of ELISA.

- Indirect ELISA.
- Competitive ELISA.
- Antigen sandwiched ELISA.
- Antigen and antibody capture ELISA.

ELISA is also classified on the basis of the antigen utilized in the test.

1st generation : Infected cell lysate are used as the antigen (This type of ELISA is hardly a choice currently due to false positive result arising out a cross reactivity with the host cell antigen).

1Ind generation : Glycopeptides (recombinant antigens) were used as the antigen.

IIIrd generation : Synthetic peptides are used as the antigens.

ELISA takes upto three hours to yield results, it has major advantage being economical.

RAPID TESTS : Give results within minutes. They are done utilizing commercially available kits. They includes

(i). Dot blot assays.

(ii). Particulate agglutination tests (Geletin, RBC Latex, Microbeads).

(iii). HIV spot and comb tests.

(iv). Flurometric Microparticle techniques.

Reliability of ELISA antibody assays

ELISA reactive individuals should be confirmed by a suitable confirmatory test before declaring positive for HIV infection.

ELISA reactive blood product should be confirmed by western blot.

CLONE SYSTEMS HIV-1 AND HIV-2 TEST KIT

CLONE SYSTEMS

HIV-1 and HIV-2 test kit is a solid phase enzyme immno assay representing epitopes of synthetic HIV-1 synthetic HIV-2 are coated into wells of a micropipette serum or plasma samples diluted in a solution are added to these wells. If antibodies specific for HIV-1 and or HIV-2 are present in the sample, they will form stable complex with HIV antigen on the well. A goat antihuman IgM labeled with hoeseradish peroxidase is added. If the antigen antibody complex is present, the peroxidase conjugate will bind to the complex and remain in the well.

Enzyme substrate is then added; during incubation blue color will develop in proportion to the amount of anti HIV antibody bound to the well; wells containing samples negative for anti HIV antibody are colourless.

An acid stop solution is added to each well and the colour read on the microplate reader at 450 nm.

Material supplied :

1. Microplate coated with HIV-1 and HIV-2 peptides
2. One vial negative control (1 ml human)
3. 1 Vial (1 ml) positive control (human)
4. 1 Vial (20 ml) sample diluent
5. 1 Vial (50 ml) wash solution concentrate (10X)
6. 1 Vial (0.5 ml) Anti human 1 gm peroxidase conjugate (40X)
7. 1 Vial (15 ml) conjugate diluent
8. 1 Vial (2 ml) Tetramethyl Benzidine Reagent (TMB)

9. 1 Vial (20 ml) penoxidase Reagent.
10. 1 Vial (10 ml) stop solution (INH_2SO_4).

PRECAUTIONS :

- For in vitro diagnostic use only
- Do not pipette by mouth
- Do not smoke, eat or drink in areas in which specimens are handled
- Rubber or disposable gloves are worn through out the testing procedure.

➢ The positive control sera have been inactivated. This does not ensure the absence of viable HIV and therefore these sera should be handled as potentially biohazardous following good laboratory practice.

➢ All human serum components were found to be negative for hepatitis B surface antigen. This does not ensure the absence of hepatitis B virus. This kit requires the use of 1 N sulphuric oxide. Do not combine acid with waste material containing sodium oxide.

➢ All material in this assay including reagents and samples should be disposed off in a manner that will inactivate human hepatitis B virus and HIV.

Solid waste : Autoclaves 60 min at 121°C.

Liquid waste : Add sodium hypochloride to a final concentration of 1.0%. the waste should be allowed to stand a minimum of 30 min to inactivate the virus before disposal.

- Do not use the kit beyond its labeled expiry date.

- Bring reagent to room temperature 15 to 30 minutes before use room temperature for this assay is defined as 18-24^{O}C.

- Serum or plasma samples may be stored at 2^{O} C to 8^{O} C or frozen at 20^{O} C or below. Self defrosting freezers are not recommended. Avoid multiple freeze than cycles.

Reagent preparation :

1) Positive control – supplied in prediluted form.
   Do not dilute.
2) Negative control – supplied in prediluted form.
   Do not dilute.
3) Unknown samples diluted 1:50 with sample diluent.
4) Wash solution concentrate; dilute 1:10 with distilled or deionised water.
5) HIV-1 and HIV-2 Micropalate store at 2^{O}-8^{O} C bring to room temperature before removing from pouch.
6) **Peroxidase conjugate (40x liquid concentrate)** : Bring conjugate diluent buffer to room temperature 15 to 30 min before use. Dilute 0.3 ml conjugate concentrate in 12 ml conjugate dilute. Mix thoroughly use with in 8 hours.
7) **Substrate solution** : Transfer 5 ml of peroxide reagent for each 1 ml TMB. Reagent to be diluted into a clean

container (alcohol rinsed followed by distilled or deionised water) allowing at least 0.1 ml substrate solution for each coated well.

Add required volume of TMB reagent to the peroxide reagent and scoil gently to mix the substrate solution should be colourless. A deep blue colour indicates that the solution has been contaminated and should be discarded.

Specimen Collection and Handling

1) Handle all blood plasma and serum as if capable of transmitting hepatitis virus and/or HIV.

2) Where possible, clear unhemolysed specimen should be used, specimen should be collected aseptically, early separation from the dot prevent hemolysis of serum. USE OF HEAT INACTIVATED SERUM OR PLASMA IS NOT RECOMMENDED AS THIS WILL LEAD TO FALSE POSITIVE RESULT.

3) Avoid multiple freeze thaw cycles, which may result in sample deterioration and cause a false positive reaction, self-defrosting freezer are not recommended for storage of the samples.

4) Undiluted specimens may be stored at 2^{0} to 8^{0} C. if they are suitably vialed and stoppered at 20^{0} C as below.

5) Use sample dilution with in 8 hours of preparation. Bring to room temperature 15-30 min before use.

Test procedure :

Specimen may contain HIV or Hepatitis virus, handle as if capable of transmitting virus. Plasma or serum sample should be screened at a standard 1:50 dilution on the HIV-1 and HIV-2 microplate; Initial reaction in the screening test must be retested in duplicate.

Bring all reagent to room temperature before using :

1. Into a clean test tubes uncoated microplates or other comparable container dilute 5µl of each sample to be tested with 0.25 ml sample dilute and mix well. These methods may be performed with an automatic diluting device.

2. Remove the microplate from the refrigerator and allow to come to room temperature (approximately 10-30 min). Remove the plate from its pouch. Just before use and label.

3. Despense 0.1 ml of the sample diluent into A_1 for use as a substrate blank.

4. Dispense 0.1 ml of the negative control sample into each of 3 wells and 0.1 ml of the positive control into each of 2 wells. Similarly dispense 0.1 ml of diluted samples into wells using a separate pipette for each sample.

5. Incubate at room temperature for 30 minutes.

6. Aspirate and wash the plate 5 times with 0.3 ml/well of wash solution. Automated washer should be adjusted to fill each well completely without overfilling. After the final wash be sure of all the solution is removed from each well. Sharply top the plate upside down on absorbent paper to remove the last remaining fluid.

Note : Proper wash procedure is essential for good assay performance.

7. Dispense 0.1 ml of diluted peroxidase conjugate into each well of the micro plate including.

8. Incubate the plate for 30 min. at room temperature.

9. Aspirate and wash the plate times with 0.3 ml/well of wash solution, after the final wash be sure all solution is removed from each well.

10. Add 0.1 ml of freshly prepared substrate solution in to each well.

Note : Use of multi pipettes is recommended for manual addition of both substrate and stop solutions. Manual single well additions may affect accurate timings at this point in the procedure.

11. Incubate the substrate filled plates for 30 min. At room temperature (18-24^{o} C) start the timing with in 3 min. after the addition of the reagent to the first well.

12. Stop the reaction by adding 0.1 ml. solution into each well in the same order used in the addition of the substrate reagent.

13. After adding the stop solution, the colour the developed may be read or the plate at 450 nm. Test must be read with in 30 min.

Note : The reader should be blanked at against the substrate blank. Bichromatic absorbance measurements with a reference wavelength of 600-650 nm is recommended when available.

14. Record the absorbance results or a data sheet include the kit master date. Operator name and any other notes about the run. If a printed copy of the absorbance reading is available, it should be attached to the data sheet.

RESULTS :

Test validity : Three negative and two positive controls must be included on each run. The controls results must be examined before the sample results can be interpreted.

Calculation of negative control mean (NCX).

Example :

Negative control

Sample Number	Absorbance
1	0.029
2	0.026
3	0.026
Total	0.081

Absorbance of individual negative control values must be les than or equal to 0.15. If one value is out side this range, discard this value and recalculate the mean. If two values are outside this range the run should be repeated.

Calculation of positive control mean (PCX).

Positive control

Sample Number	Absorbance
1	1.536
2	1.551
Total	3.087

PCX = 3.087/2 = 1.544

The positive control mean must be equal to or greater than 0.80. If the mean value is less than 0.80 the run should be repeated.

Cut off Determination

Cut off = NCX + 0.15

Example – NCX = 0.027 + 0.15 = 0.177

Interpretation of sample results.

1. If the initial test result absorbance value is less than the calculated cut off value than sample is considered non reactive.

2. If the screening value of sample is equal to or a greater than cut off retest in duplicate using a fresh dilution of the original sample.

3. If both the retested value are less than cut off, the interpretation of the total testing is non reactive for HIV-1 and HIV-2 antibodies. If both result values are equal to or greater than the cut off or if one of the duplicates is equal to or greater than the cut off and one is less than cutoff, the interpretation of the testing is repetitively reactive. The sample should be considered reactive or positive of the HIV EIA test.

WESTERN BLOT TEST

It is an assay to the presence of HIV antibodies of IgG and IgM class.

Important steps are given below :

1. HIV is lysed and proteins are separated on poly acrylamide gel by electrophoresis.

2. The separated proteins are then transferred to a nitrocellulose sheet by blotting or by electrophoresis.

3. The sheet is then cut into strips provided with the commercial kits.

4. Serum sample is incubated with this strip. HIV antibodies bind to the various HIV proteins.

5. Enzyme labelled antibody conjugate is added to the strip after washing. The conjugate binds to the antigen antibody complex.
6. Substracts is added after incubation and washing.

7. This produces coloured bands at the sites where patients antibody (Ig G or Ig M) bind with the viral proteins or the strip.

8. The results of the test sera are compared with the results of the known positive and negative sera supplied with the kit.

The position of the bands confirms the positive and negative status of the individuals.

9. WHO criteria for interpretation of the Western blot test are given in the table –

Interpretation	HIV-I	HIV-II
Positive	2 env band with or without gag polbands.	2 env band with or without gag polbands.
Negative	No bands or presence of bands that does not correspond to the structural HIV-I proteins.	No bands or presence of bands that does not correspond to the structural HIV-II proteins
Intermediate	Other profile not considered positive or negative.	Other profile not considered positive or negative

Presence of P^{24} +gp.120/gp^{160} strongly indicates seroconversion.

OBSERVATIONS

OBSERVATIONS

The present study includes one hundred fifty antenatal cases from O.P.D and Indoor of Department of Obstetrics and Gynaecology in M.L.B. Medical College Jhansi.

Cases are divided into two groups

Control Group

Consisting of fifty normal antenatal patients

Study Group

Consisting of hundred antenatal patients with previous bad obstetric history in the form of abortions, preterm deliveries, still birth & congenital malformations.

Incidence of TORCH positivity was studied in both the groups with relation to age, parity and socio-economic status.

TABLE - 1

Total no. of cases screened	**150**	**Positive for Torch**		**Positive for HIV**	
Control group	50	3	6%	0	0%
Study group	100	35	35%	0	0%
Total	**150**	**38**	**41%**	**0**	**0%**

Table-1 shows that total 150 antenatal patients were screened for any of TORCH infections and HIV. Total of 38 patients screened positive for TORCH infections, 35 in the study group and 3 in control group.

TABLE - 2

PREVALENCE OF TORCH SEROPOSITIVITY IN STUDY AND CONTROL GROUP

TORCH tests	Study group	Control group
	No. of cases 100	No. of cases 50
Toxo IgG	12	02
Toxo IgM	05	--
Rubella IgM	07	01
CMV IgM	05	--
HSV IgM	06	--
Total	**35**	**03**

Above table shows that TORCH positivity in study group was 35% and in control group 6%. Maximum number of cases screened positive for Toxo IgG 14%, Toxo IgM 5%, Rubella IgM 8%, CMV IgM 5% and HSV IgM 6%.

TABLE - 3
INCIDENCE OF TORCH INFECTION WITH AGE DISTRIBUTION IN CONTROL GROUP

S. No.	Age Group (yrs)	No. of patients	%	TORCH Positivity
1	16-19	6	12%	-
2	20-23	11	22%	1
3	24-27	15	30%	2
4	28-31	9	18%	-
5	32-35	8	16%	-
6	36-39	1	2%	-
	Total No. of patients	**50**	**100%**	

Table 3 shows that majority of patients were in the age group of 24-27 years. Minimum patients were in the gp. 36-39 yrs. Maximum no. of TORCH positive cases were also found in the age group 24-27 yrs, followed by one patient in 20-23 year age group.

TABLE - 4
INCIDENCE OF TORCH INFECTION WITH AGE DISTRIBUTION IN STUDY GROUP

S. No.	Age Group (yrs)	No. of patients	%	TORCH Positivity
1	16-19	18	18%	5
2	20-23	24	24%	6
3	24-27	32	32%	13
4	28-31	12	12%	6
5	32-35	13	13%	5
6	36-39	1	1%	-
	Total	**100**	**100%**	**35**

Table - 4 shows that majority of patients in study group found to be seropositive lied in the age group 24-27 yrs, accounting for 37.2% of cases. Relatively equal distribution was in rest of the groups. No patients screened positive in the age group 36-39 years.

INCIDENCE OF TORCH INFECTION WITH AGE DISTRIBUTION IN CONTROL AND STUDY GROUP

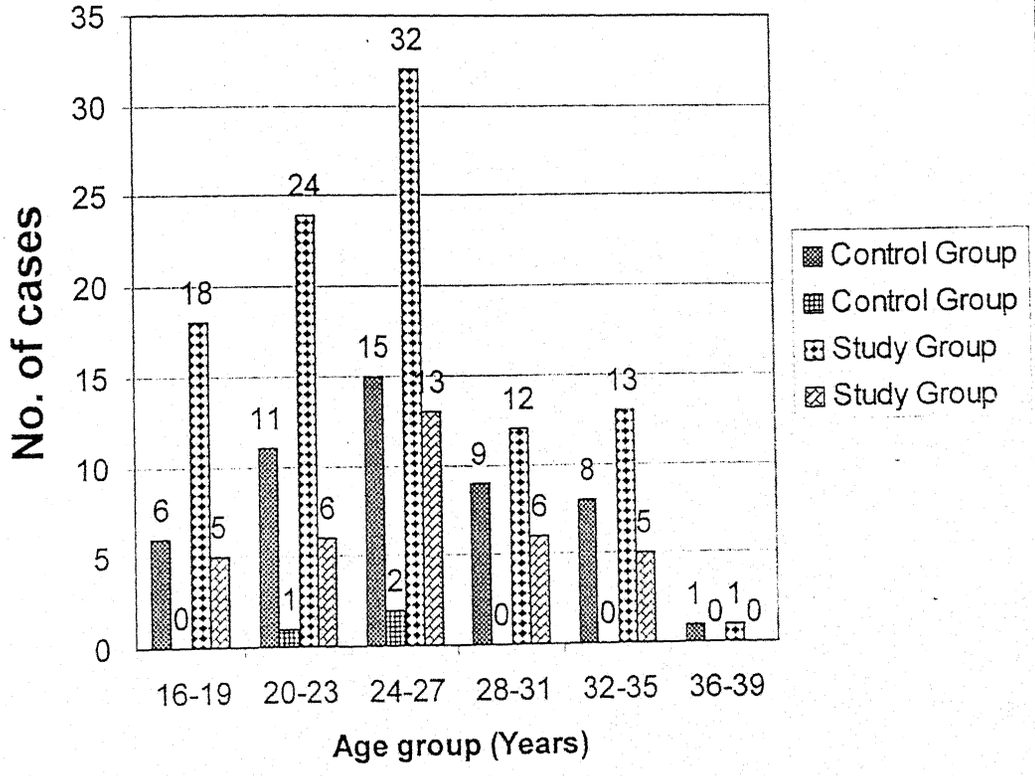


TABLE - 5

INCIDENCE OF TORCH POSITIVITY ACCORDING TO PARITY DISTRIBUTION IN CONTROL GROUP

S. No.	GRAVIDA	Total no. of cases	%	Serological evidence of TORCH
1	Primi	10	20%	-
2	Second	10	20%	-
3	Third	16	32%	2
4	Fourth	9	18%	1
5	Fifth and onwards	5	10%	-
	Total	**50**	**100%**	**3**

Table - 5 shows that majority of patients were third gravida (32%); followed by second (20%) fourth gravida (18%). All three seropositive cases were from third and fourth gravida.

TABLE - 6

INCIDENCE OF TORCH POSITIVITY ACCORDING TO PARITY DISTRIBUTION IN STUDY GROUP

S. No.	GRAVIDA	Total no. of cases	%	Serological evidence of TORCH
1	Primi	-	-	-
2	Second	16	16%	2
3	Third	38	38%	19
4	Fourth	32	32%	12
5	Fifth and onwards	14	14%	2
	Total	**100**	**100%**	**35**

Table-6 shows that majority of patients were third gravida (38%). Maximum no. of seropositive cases (54%) also were third gravida, followed by fourth gravida, in which total of 34% patients of study group were seropositive.

INCIDENCE OF TORCH POSITIVITY ACCORDING TO PARITY DISTRIBUTION IN CONTROL AND STUDY GROUP

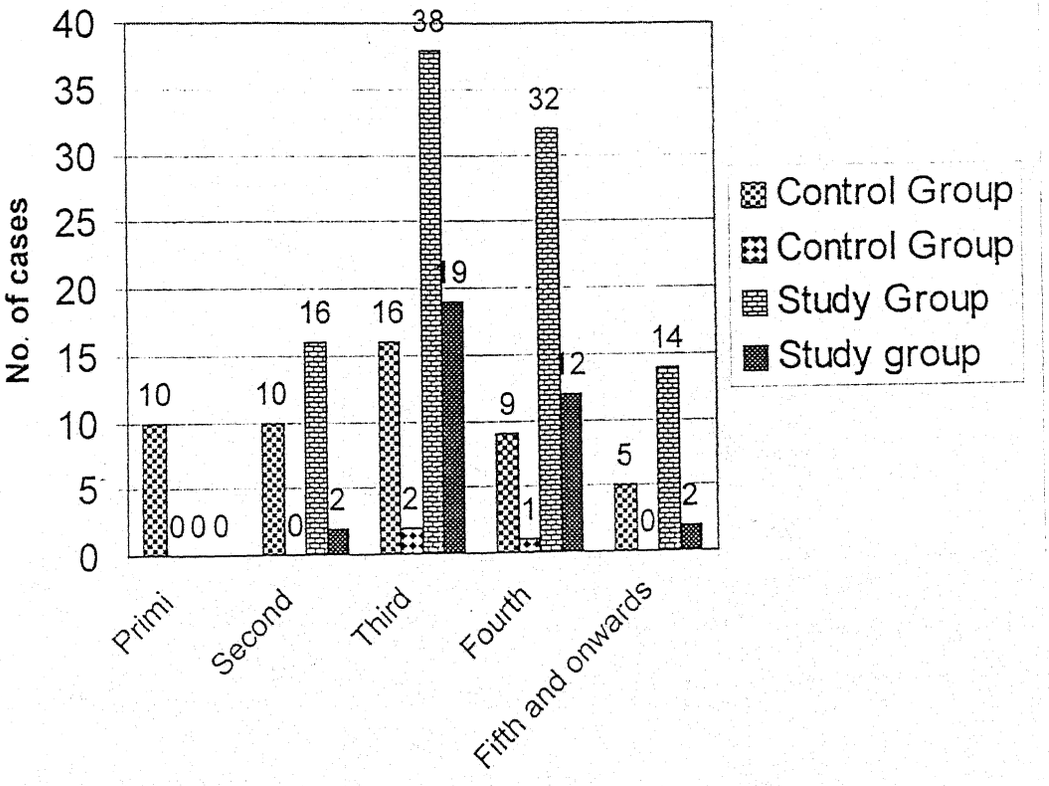


TABLE - 7

TORCH POSITIVITY WITH RELATION TO SOCIO-ECONOMIC STATUS IN CONTROL GROUP

S. No.	Socio-economic status	No. of cases	Serological evidence of TORCH
1	Lower	20	2
2	Middle	26	1
3	Upper	4	-
	Total	**50**	**3**

Table - 7 shows that the although more patients were in the middle socio-economic status, TORCH positivity was more in lower socio-economic level (2 out of 3) patients.

TABLE - 8

TORCH POSITIVITY WITH RELATION TO SOCIO-ECONOMIC STATUS IN STUDY GROUP

S. No.	Socio-economic status	No. of cases	Serological evidence of TORCH
1	Lower	52	22
2	Middle	40	12
3	Upper	8	1
	Total	**100**	**35**

Table - 8 shows that seropositivity for TORCH infection was maximum in lower socio-economic status patients (63%).

TORCH POSITIVITY WITH RELATION TO SOCIO-ECONOMIC STATUS IN STUDY AND CONTROL GROUP

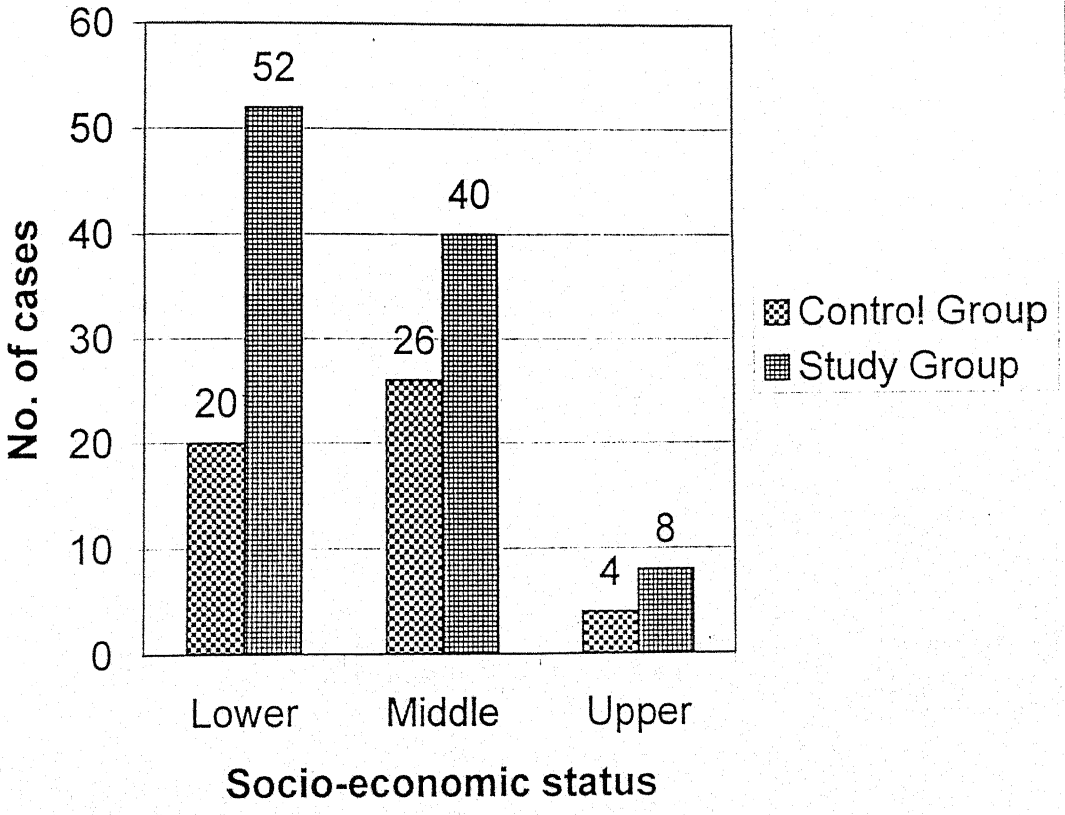


TABLE - 9

RURAL AND URBAN DISTRIBUTION OF TORCH POSITIVE CASES IN CONTROL GROUP.

Cases	Rural	Urbal	Total
Positive	2 (10%)	1 (3.33%)	3
Negative	18 (90%)	29 (96%)	47
Total	**20 (100%)**	**30 (100%)**	**50**

Table - 9 shows that incidence was more in rural (10%) than in urban area (3.33%).

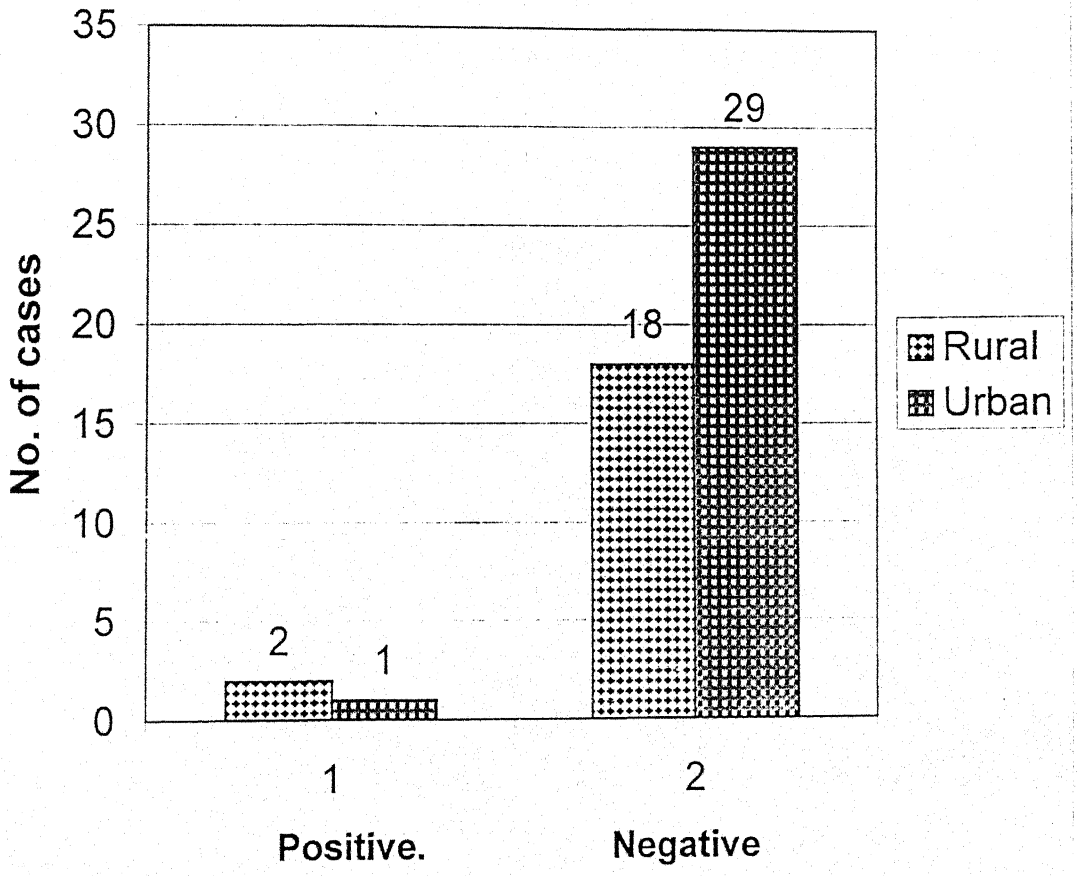
TABLE - 10

RURAL AND URBAN DISTRIBUTION OF TORCH POSITIVE CASES IN STUDY GROUP.

Cases	Rural	Urban	Total
Positive	23 (38%)	12 (30%)	35
Negative	37 (62%)	28 (70%)	65
Total	**60(100%)**	**40 (100%)**	**100**

Table - 10 shows that incidence of Torch positivity was slightly more in (38%) in Rural patients than in urban patients (30%).

RURAL AND URBAN DISTRIBUTION OF TORCH POSITIVE CASES IN CONTROL GROUP



RURAL AND URBAN DISTRIBUTION OF TORCH POSITIVE CASES IN STUDY GROUP

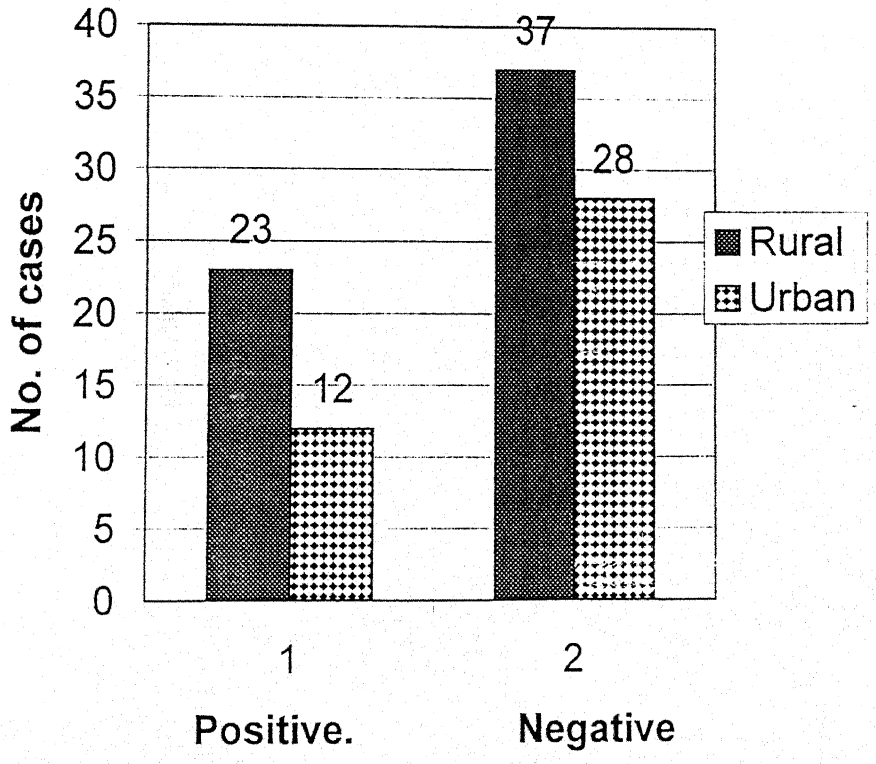


TABLE - 11

SPECTRUM OF BAD OBSTETRIC HISTORY IN STUDY GROUP

S. No.	Nature of BOH	No. of cases in 100	Percentage
1	Abortions	46	46%
2	Preterm births	18	18%
3	Intrauterine growth restriction	09	9%
4	Perinatal death	20	20%
5	Congenital anomalies	07	7%

The above table shows that abortions accounted for worst obstetric outcome 46%, perinatal death 20% followed by preterm birth 18% then intrauterine growth restriction and congenital anomalies as 9% and 7% respectively.

SPECTRUM OF BAD OBSTETRIC HISTORY IN STUDY GROUP

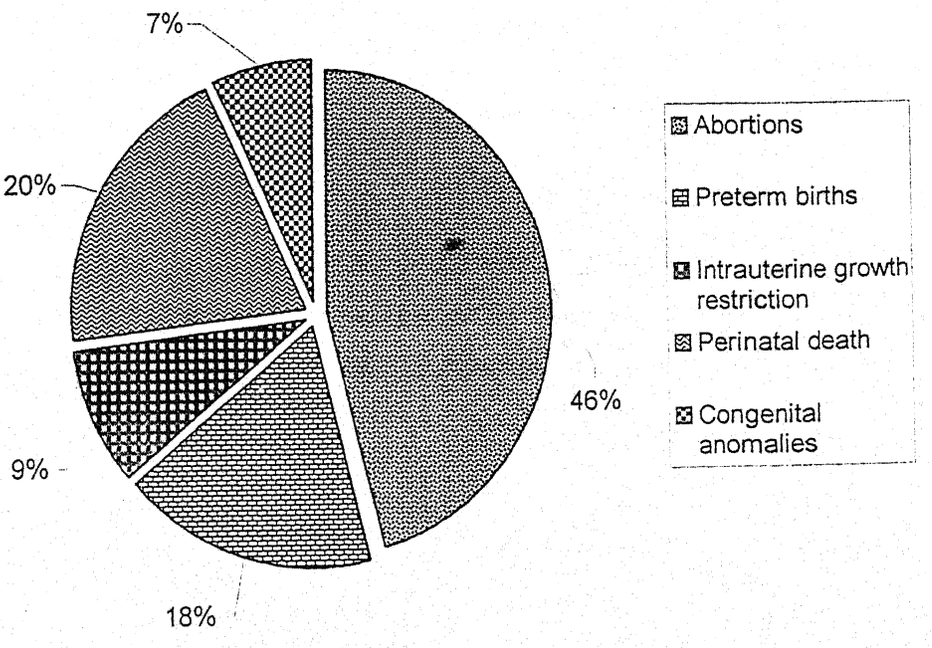


TABLE-12
TORCH POSITIVITY IN RELATION TO TYPE OF PREGNANCY LOSS

S. No.	Type of pregnancy loss	No. of TORCH Seropositive cases	Percentage
1	Abortions	12	34.3%
2	Preterm births	05	14.3%
3	Intrauterine growth restriction	07	20.0%
4	Perinatal death	08	22.8%
5	Congenital anomalies	03	8.5%

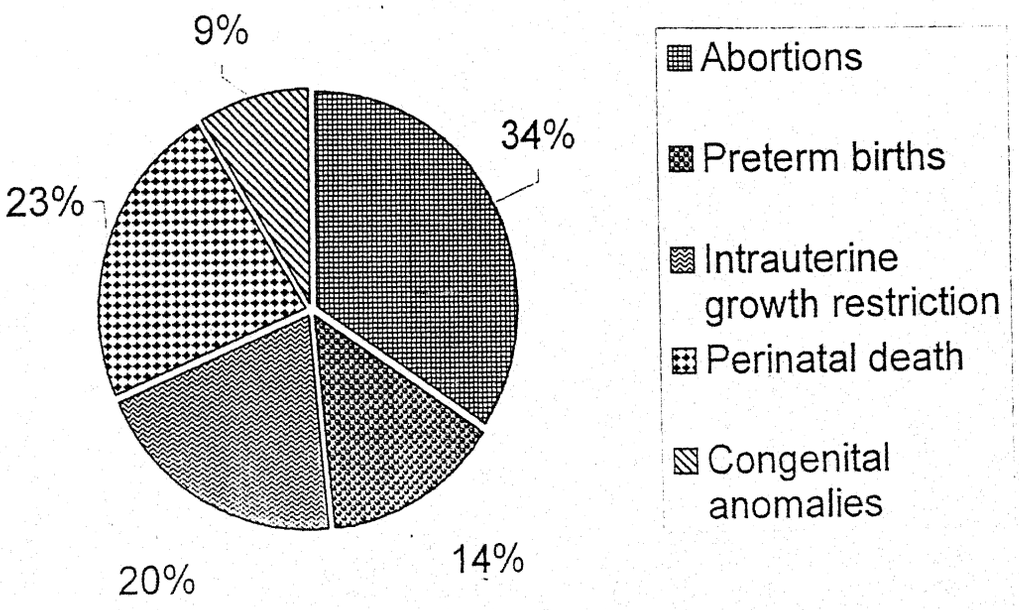
The above table shows that 34.3% of women with abortions screened positive for one or more TORCH infections followed by perinatal deaths in 22.8%, then IUGR in 20%, lastly preterm birth and congenital anomalies at 14.3% and 8.5% respectively.

TABLE-13
ARE THE TORCH POSITIVE CASES HIV POSITIVE ALSO?

	TORCH Positive cases	HIV testing (Screening with ELISA)
Study group	35	00
Control group	03	00

None of the TORCH positive cases in either study or control group screened positive for HIV.

TORCH POSITIVITY IN RELATION TO TYPE OF PREGNANCY LOSS



DISCUSSION

DISCUSSION

Congenital infections are an important cause of fetal and neonatal mortality and morbidity. "TORCH" infections are known to cross the placental barrier and invade the fetus in utero and this has been confirmed by various studies in animals and humans.

For epidemiological surveys, majority of workers prefer ELISA technique for serological tests as this is the most specific, sensitive and reproducible method available (Engerall and Perlmann 1971, 1972).

In the present study, total number of cases who under went serological tests for "TORCH" infections were 100 antenatal women with bad obstetric history. Out of 100 cases 35 patients screened positive for one or more TORCH infections. 17 cases were positive for toxoplasmosis (12 cases for toxo IgG and 5 cases for toxo IgM). 7 were found positive for rubella IgM, 5 cases for CMV IgM and 6 cases were positive for HSV IgM.

In the control group 50 cases were taken with no bad obstetric history and 3 cases were found positive for TORCH.

Various studies have been conducted in India to find out the prevalence of toxoplasmosis among healthy pregnant women with good obstetric history. While Hingorani et al (1974) reported prevalence of toxoplasmosis Ab in 5% of normal expectant women without any history of pregnancy wastage. Mahajan et al (1975-76)

and Singh et al (1978) reported an incidence of 9% & 7% prevalence of toxoplasma antibodies in their normal antenatal cases respectively.

Toxoplasmosis acquired in first trimester may lead to miscarriage, but if occurring late in pregnancy may result in either asymptomatic and subclinical infection (Lec 1988).

The cases which tested positive for toxo IgM presented with history of spontaneous or recurrent abortions, still birth, congenital anomalies in the new born and preterm delivery. 12% of cases in study group were positive for IgG toxoplasma antibodies and 5% for IgM toxoplasma antibodies, 34.3% had abortions, 14.3% preterm birth, 2% intra uterine growth restriction, 22.8% perinatal deaths and 8.5% congenital anomalies. The incidence of abortions in the present study is 34.3% which is somewhat comparable to results of Kimball et al (1971) 38% and 32.9%.

Sharf et al in 1973 compared association with preterm labour to be 5.6%. In present study a greater association of 14.5% was observed.

Much higher incidence was reported by Pal et al in 1975 & 1981 of TORCH infection in relation to perinatal deaths. Eckerling et al (1968) reported incidence of 20% and 22.5%. This was comparable to the present study of 22.8%.

Maternal rubella during the first trimester of pregnancy cause fetal damage in the majority of cases. After the first trimester

and particularly during the fourth month of pregnancy the risk of fetal damage declines. There are few reports from India demonstrating clinical evidence for the existence of rubella infection in the population (Veale 1866, Sikander 1930 or Seth et al 1971, Mathur et al 1976).

Seth et al (1971) reported an incidence of 77.5% to 88% in Delhi and neighboring areas while 93.9% was reported from Lucknow. Chakraborty et al (1973) reported a lower incidence 53.14% from Calcutta.

This study gives an indication that rubella infection is common in India and every obstetrician should have it in mind when dealing with a newborn with congenital anomalies and proceed for investigations accordingly.

Primary maternal CMV infection is likely to be transmitted to fetus (Noukeruis 1984, Griffith 1991, Lieyu Lie 1990) suggests the potential for CMV transmission to the fetus in early pregnancy.

Susceptibility to primary CMV infection varies with age, geographic location and socioeconomic standard of the population (Mackay and Wood).

Prospective studies have shown that primary CMV infection occurs in approx 1% of women who are seronegative. In this study 5 CMV IgM positive cases were found.

Genital HSV infection during pregnancy and delivery may have serious effects such as in utero infection, fatal neonatal

viraemia and haemorrhage. (Miller DP 1970, Goldkranel et al 1982). In this study 6 out of 100 patients in study group, with primary genital herpes infection, developed perinatal complications. We found an association between genital HSV infection and abortions, preterm labour and neonatal complications.

In the present study, HIV screening was done in antenatal patients who were positive for TORCH, and no cases were found positive for HIV.

Prenatal transmission of HIV to the fetus occurs in 15-33% of progenies may be requiring termination (Webster Johns 1990). Those desiring to continue pregnancy can be told that there is no evidence that babies born to such mothers are at increased risk of prematurity or growth retardation (John et al 1988).

Transmission of virus from mother to fetus may occur during gestation by crossing the placenta, during delivery by contact with maternal blood, body fluids and post partum via breast feeding. 25% to 35% of infants born of mothers are ultimately infected. In India seropositive rate among pregnant women attending antenatal clinics ranges from 1-5 per 1000.

In the present study majority of TORCH positive cases (37.2%) were seen in age group 24-27 years. No patient screened positive above 36 years old age group. Soni JK et al (1995) reported that sero positivity was more common in age group of 24-30 years. Nagar P et al (1995) also suggested that maximum age group

infected was between 23-27 yrs. Kusum Saxena et al (1993) reported maximum incidence in third decade.

Maximum number of TORCH positive cases were third and fourth gravida. (50% & 34%). Similar observations were made by Soni JK et al (1995). Tomba Singh et al (1992) also found maximum sero positive cases belonged to gravida 3.

In control group also, TORCH positive patients were maximum in third and fourth gravida.

In both study and control group, TORCH positivity was seen according to socioeconomic status. In both groups, seropositivity was maximum in lower socioeconomic group than middle class. Only 1 patient was in upper socioeconomic status. Similar observation was found by Ashrafunseua et al (1998) in Bangladesh where incidence in lower socioeconomic group was 53%.

In our study group we found a higher incidence of TORCH positivity in rural area (38%) as compared to urban area (30%). In control group also, incidence was higher in rural (10%) than urban areas (3.33%).

In the study by Badili stray Pederson (1975) in Oslo and More area, higher seropositivity was in rural population. This could be due to lower resistance to infection and un hygienic living conditions.

SUMMARY AND CONCLUSION

SUMMARY AND CONCLUSION

The present study entitled "**Prevalence of TORCH and HIV in patients with bad obstetric history**" was conducted in the Department Obstetrics and Gynaecology of MLB Medical College Jhansi. Cases were selected from Out Patient Department and ward of Department of Obstetric and Gynecology of MLB Medical College Jhansi.

This study included 150 antenatal cases, 100 women having bad obstetric history including, abortions, preterm delivery, perinatal deaths and congenital anomaly were taken as study group. Control group consisted of 50 antenatal patients with no such history. All the 150 patients were subjected to antibody testing for TORCH by ELISA technique.

Incidence of the TORCH positivity was studied in both the groups with relation to age, parity, socioeconomic status and rural or urban background.

Following conclusion has been drawn from this study :-

1) In the normal antenatal patients (Control group), TORCH positivity was 6%. IgM was positive for 1 case for rubella and Toxo IgG was positive in 2 patients.

2) In the study group, TORCH positivity was 35%. 12 patients were positive for Toxo IgG, 5 patients for Toxo IGM. 7

tested positive for rubella IgM. 5 patients for CMV IgM and 6 patients screened positive for HSV IgM.

3) Maximum TORCH positivity was seen in the age group 24-27 years in both study and control groups. No patients screened positive above 36 years.

4) Maximum patients were third, then fourth gravida in both study and control group. (32% and 38%).

5) Highest number of TORCH positive cases belonged to the lower socio-economic status group in both study (63%) and control group (65%).

6) Higher incidence of TORCH positivity was found in rural area in control group (10%), and study group (38%). This could have been due to lower resistance to infection and unhygienic living conditions.

7) Spectrum of bad obstetric history in the study group consisted of abortions as the worst out come (46%), perinatal deaths (20%) followed by preterm birth at (18%) then IUGR and congenital anomalies at 9% and 7% respectively.

8) Maximum TORCH positivity was present in women with abortions (34.3%), followed by perinatal deaths in 22.8% then IUGR 20%. Lastly preterm birth and congenital anomalies at 14.3% and 8.5% respectively.

9) None of the TORCH positive cases in the study and the control group screened positive for HIV.

TORCH infections are known to cross the placental barrier and invade the foetus in utero. This has been confirmed by various studies in animals and in humans. The isolation of the infective agent from the product of conception is the most reliable method to arrive at the diagnosis of the disease. Although no causative relationship of HIV infection with bad obstetric outcome has yet been established, TORCH series infections however remain as one of the important causes of abnormal pregnancy outcomes.

Among the antenatal population, the presence of TORCH antibodies in their sera is significant. It can thus be concluded, that it is imperative to screen for TORCH infections in women with history of abnormal pregnancies for better perinatal outcomes. Since at present, neither effective vaccines nor revolutive therapies are available against viral infections the main means to fight these infections to transmission to fetus, still remains the prevention of the infections in pregnant women.

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